Project 2 Design Document

Program Requirements

The Hogwarts Potions Club recently held election for President, Vice-President, Secretary, and Treasurer. The program will read from a file containing the students’, teachers’, ghosts’, and paintings’ votes, then figure out and display the winner of each election.

Program Inputs

The input for this program is one .txt file containing integers with values no greater than 8. The value of the integers determines who each vote was placed for. After being read into the program, each of these values will be counted and accordingly assigned to a variable representing one of the candidates.

Program Outputs

The program will output the results of the Hogwarts Potions Club elections. It will output each category, along with the name of the candidates, who won the election, total votes for each candidate, and percentage of votes won by each candidate.

Test Plan

To test my program, I will use the .txt files that Dr. Ray has provided on Canvas. After downloading and running these files in my program, I will compare the votes my program counts and produces as compared to the sample outputs provided on Canvas. In the case of “votesimple.txt,” for example, Cedric Diggory should have 3 votes (60% and be declared winner), Harry Potter should have 2 votes (40%), Vincent Crabbe should have 4 votes (80% and be declared winner), Hermione Granger should have 1 vote (20%), Luna Lovegood should have 3 votes (60% and winner), Susan Bones should have 2 votes (40%), Draco Malfoy should have 4 votes (80% and winner), and Neville Longbottom should have 1 vote (20%).

Solution Overview

To begin solving the problem presented, I will assign variables for each candidate and the values for the sums of each election, along with one single variable that each integer will be assigned to during different iterations of the while loop. These variables will also be set to zero when being declared. The input for the program (the .txt file containing integers representing the votes) will then be opened, and every value will be read in by using a while loop set to run until no more inputs can be read in from the file. Within the while loop, I will use a switch statement that will read the value of each integer and assign a vote to the variable for the corresponding candidate. After all of the votes have been tallied, the total votes for each race will be added for later use in finding the percentage of votes for each candidate. A series of if statements will be used when outputting the results to find the winner of each race. The winner’s name, number of votes, and percentage of votes won will be printed first, and the word “WINNER” will be printed beside the winner’s name; the loser of the race will be printed immediately thereafter.

Algorithm Flowchart

Diagram

Description automatically generated